

## **DETAILED ACTION**

### ***Status of Prosecution***

A Request for Continued Examination was filed October 2, 2009.

The previous rejection under 35 USC 112, second paragraph, has been withdrawn but a new rejection is made under the same statutory provision.

The rejection under 35 USC 103(a) over Ravet (US 2002/0195591) is maintained.

The text of those sections of the statutes, rules, caselaw, and guidelines not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 112***

Claims 1-3, 5-12, and 14-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 12 and 13, is unclear whether the language “A, D, M, Z, O, N, and F” means that all of those elements must be present. It is suggested that the same language be deleted.

In claim 1, line 14, “are” apparently should be changed to – is --.

The claim(s) should be rewritten as appropriate to clearly set forth the claimed invention. No new matter should be added. Notwithstanding the above rejection(s), the claim(s) is (are) examined to the extent understood. MPEP 2173.06.

### ***Claim Rejections - 35 USC § 103***

Claims 1-3, 5-12, and 14-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ravet (US 2002/0195591).

Ravet teaches a process for preparing a composite material comprising mixing  $\text{LiFePO}_4$  and an electronically conducting compound such as carbon [0069-0077]. The  $\text{LiFePO}_4$  and organic compound are mixed and dried, and the organic compound is thermally decomposed at  $700^\circ\text{C}$  for 3 hours in an inert atmosphere of Ar [0071]. The amount of carbon in the final product may be 0.1-55 wt% [0020, 0071, 0073, and 0077].

Ravet does not appear to teach thermal decomposition for "a short period of time of 1 hour or less".

Nevertheless, Ravet teaches thermal decomposition for 3 hours, as discussed above. Such a time period is deemed to be "short".

It would have been obvious for a process for preparing a composite material of  $\text{LiFePO}_4$  and carbon, as taught by Ravet, to have a step of thermal decomposition for a short period of time because Ravet teaches a sol-gel step with a thermal decomposition step of 3 hours. The length of time of 3 hours also is considered to be a short time. Moreover, the time period of 3 hours comprises the time period of 1 hour as well. Some thermal decomposition would have occurred during the first hour. In any case, the time period of 3 hours is close enough to the time period of 1 hour that one skilled in the art would have expected the same result. MPEP 2144.05, I.

With respect to claim 8, Ravet teaches drying under vacuum [0095]. Such treatment is considered to be the start of the thermal decomposition step. Moreover, one of ordinary skill in the art would have been aware of the use of a vacuum as an obvious alternative to the use of an inert gas such as Ar in order to avoid exposure to oxygen. One of ordinary skill is not an

automaton; he or she is capable of using common sense. *KSR Intern. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007).

With respect to claim 18, Ravet teaches trituration [0100].

With respect to claims 21, 24, and 26, Ravet teaches a sol-gel technique [0096].

With respect to claims 22, 23, and 25, Ravet teaches a variety of organic compounds [0024, 0052].

With respect to claims 27 and 28, Ravet teaches the formation of a powder [0071, 0073, and 0077]. The claimed particle sizes and surface areas would have been prima facie obvious in view of the process taught by Ravet. MPEP 2112.02.

With respect to newly added claims 31-33, Ravet teaches a variety of organic compounds [0024, 0052] which also could form complexes.

### ***Response to Arguments***

The applicants' Remarks/Arguments filed October 2, 2009 have been carefully considered. Those arguments are persuasive for the previous rejection under 35 USC 112, second paragraph, but not for the maintained rejection under 35 USC 103(a) as obvious over Ravet.

The applicants argue that Ravet does not teach or suggest their "single step" process but instead teaches a "two-step" method. The first step in Ravet, they assert, involves a time-consuming step of synthesizing the  $\text{LiFePO}_4$ , followed by the second step of thermally decomposing the "outer carbonaceous portion" of the composite around the  $\text{LiFePO}_4$ . The second step may be 3 hours, but the first step is said to be much longer.

This argument is not supported by the language of claim 1. During prosecution the claims must be given their broadest reasonable interpretation. MPEP 2111. It is improper to import claim limitations from the specification. MPEP 2111.01, II.

In this case, the claimed method is not limited to a “single step” process but can include a “two-step” process as well. Present claim 1, last 4 lines, has the proviso:

in which a homogenous mixed precursor containing all the elements A, D, M, Z, O, N and F forming the electrode active compound and also one or more organic and/or organometallic compounds are thermally decomposed, in a short period of time of 1 hour or less, so as to obtain the composite material.

A careful reading of the above claim language leads to the conclusion that it does not exclude a second step or a previously synthesized  $\text{LiFePO}_4$ . The “homogenous mixed precursor” includes the listed elements forming the electrode active compound. Regardless of whether the  $\text{LiFePO}_4$  was synthesized in a previous “step”, the teaching meets the limitation of having all the elements of the “electrode active compound”. Thermal decomposition still occurred with respect to the “one or more organic and/or organometallic compounds”.

The teachings of Ravet read on aspects of the claimed process. In Example 3 of Ravet, the  $\text{LiFePO}_4$  powder is impregnated with aqueous sucrose and dried to obtain a homogenous distribution [0070]. The impregnated  $\text{LiFePO}_4$  powder would be the “precursor” and the aqueous sucrose would be the organic compound. The homogenous distribution is then thermally decomposed for three hours to obtain the composite material [0071].

The applicants argue that the newly added limitation “of 1 hour or less” serves to distinguish the claimed invention over Ravet. This argument is not persuasive. Claim 1 is

directed to a “(p)rocess for preparing a composite material” in which “a homogeneous mixed precursor” is “thermally decomposed”. It would have been expected that at least some the “homogeneous mixed precursor” is “thermally decomposed” within the first hour of the heat treatment taught by Ravet. At least some of the “composite material” would have been prepared within that first hour. Again, the claims are given their broadest reasonable interpretation during prosecution and limitations are not imported into the claims from the specification.

The applicants further point to “some of the benefits associated with the invention process” such as “improved purity, improved homogeneity, improved rapidity, improved morphology, etc.” However, no evidence is seen in the form of an oath or declaration that specifically shows unexpectedly better results over the prior art. Argument does not take the place of actual evidence when such is required. MPEP 716.01(c), II.

Accordingly, the claims are still found to have been obvious in view of the teachings of Ravet. The reference teaches a thermal decomposition time of 3 hours which is not distinguished by the “short period of time of 1 hour or less” limitation in the present claims.

Notwithstanding the above determinations, the applicants’ attempts to define a patentably distinct invention is appreciated. The applicants are invited to contact this examiner to discuss possible amendments to place this application in condition for allowance.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS MC GINTY whose telephone number is (571)272-1029. The examiner can normally be reached on M-F, 830-500.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DOUGLAS MC GINTY/  
Primary Examiner, Art Unit 1796